

CLAIM AMENDMENTS

DT01 Rec'd PCT/PTC 22 FEB 2005

1-22. (Canceled)

23. (New) An adsorbing material for producing protective materials, said adsorbing material comprising:

a sheet-like carrier material;

an at least essentially air-impervious, water-vapor-pervious barrier layer; and

an adsorbing layer

wherein the barrier layer is atop the carrier material and also serves as a bonding layer for the adsorbing layer disposed on that side of the barrier layer which is remote from the carrier material and wherein the barrier layer is formed as a multilayered laminate or as a multilayered composite comprising at least two interconnected layers or plies.

24. (New) The adsorbing material according to claim 23, wherein the barrier layer is formed as a multilayered laminate or as a multilayered composite comprising at least three interconnected layers or plies.

25. (New) The adsorbing material according to claim 23, wherein the laminate or composite comprises a core layer and two outer layers connected to the core layer

26. (New) The adsorbing material according to claim 25, wherein the core layer is formed on the basis of a cellulose- or polyurethane-based polymer

27. (New) The adsorbing material according to claim 25, wherein the two outer layers connected to the core layer are formed on the basis of a polyurethane-based, polyetheramide-based or polyesteramide-based polymer.

28. (New) The adsorbing material according to claim 25, wherein the two outer layers connected to the core layer are formed on the basis of a polyurethane.

29. (New) The adsorbing material according to claim 25, wherein the core layer is formed as a membrane 1 to 100 μm in thickness and wherein the two outer layers connected to the core layer are each formed as a membrane 1 to 100 μm in thickness.

30. (New) The adsorbing material according to claim 23, wherein the barrier layer has a 25°C water vapor transmission rate of at least 20 l/m^2 per 24 h when 50 μm in thickness and wherein the adsorbing material has a 25°C water vapor transmission rate of at least 10 l/m^2 per 24 h when the barrier layer is 50 μm in thickness.

31. (New) The adsorbing material according to claim 23, wherein the carrier material is an air-pervious textile material and has a basis weight in the range from 50 to 300 g/m^2 .

32. (New) The adsorbing material according to claim 23, wherein the barrier layer forms a continuous, uninterrupted layer on the carrier material, the thickness of the barrier layer being in the range from 1 to 500 μm and the barrier layer being applied in amounts from 1 to 250 g/m^2 , based on the dry weight of the barrier layer.

33. (New) The adsorbing material according to claim 23, wherein the adsorbing layer comprises discrete activated carbon particles in granular or spherical form having medium diameters of the activated carbon particles of <0.5 mm.

34. (New) The adsorbing material according to claim 33, wherein the adsorbing material includes the activated carbon particles in an amount from 5 to 500 g/m^2 and wherein the activated carbon particles have an internal surface area (BET) in the range from 800 to 1500 g/m^2 .

35. (New) The adsorbing material according to claim 23, wherein the adsorbing layer comprises activated carbon fibers in the form of an activated carbon fabric, said activated carbon fabric having a basis weight in the range from 20 to 200 g/m².

36. (New) The adsorbing material according to claim 23, wherein the adsorbing layer is additionally impregnated with at least one catalyst selected from the group consisting of enzymes and metal ions, the amount of catalyst being in the range from 0.05% to 12% by weight, based on the weight of the adsorbing layer.

37. (New) The adsorbing material according to claim 23, wherein the adsorbing material has a steady state water vapor transmission resistance R_{et} , measured according to DIN EN 31 092: 1993 (February 1994) and ISO 11 092, at 35°C of not more than 30 (m² · pascal)/watt when the barrier layer is 50 μm in thickness

38. (New) An adsorbing material for producing protective materials, said adsorbing material comprising:

a sheet-like carrier material;

an at least essentially air-impervious, water-vapor-pervious barrier layer; and

an adsorbing layer;

wherein the barrier layer is atop the carrier material and also serves as a bonding layer for the adsorbing layer disposed on that side of the barrier layer which is remote from the carrier material and wherein the barrier layer is formed as a multilayered laminate or as a multilayered composite comprising at least two interconnected layers or plies,

said adsorbing material offering permeation resistance to the chemical warfare agent bis-[2-chloroethyl]-sulfide (mustard gas), measured according to CRDC-SP-84010, method 2.2, allowing not more than 4 μg/cm² per 24 h when the barrier layer is 50 μm in thickness.

39. (New) A process for producing an adsorbing material according to claim 23, said process comprising the following steps:

- (a) providing a carrier material in continuous sheet form; then
- (b) applying an aqueous dispersion comprising an isocyanate and an isocyanate-reactive crosslinker to the carrier material; then
- (c) predrying the dispersion applied in step (b) until the water is removed, wherein the predrying temperatures are below the crosslinking temperature of the dispersion and amount to about 80°C to 120°C, to form a continuous uninterrupted tacky layer or film which also serves as a bonding layer for the layer or membrane based on a cellulose-based polymer to be applied in subsequent step (d); then
- (d) applying a layer or membrane based on a cellulose-based polymer to the still tacky bonding layer generated in step (c); then
- (e) applying an aqueous dispersion comprising an isocyanate and an isocyanate-reactive crosslinker to the step (d) applied layer or membrane based on a cellulose-based polymer; then
- (f) optionally, predrying the dispersions applied in step (b) until the water is removed, wherein the predrying temperatures are below the crosslinking temperature of the dispersion and amount to about 80°C to 120°C, to form a continuous uninterrupted tacky layer or film which also serves as a bonding layer for the adsorbing layer to be applied in subsequent step (g); then
- (g) applying the adsorbing layer to the step (e) applied layer, consisting of the dispersion, or else to the step (f) generated, still tacky bonding layer; then
- (h) drying and crosslinking the dispersion or the still tacky bonding layer by heating to above the crosslinking temperature at temperatures of 140 to 180°C or more, to form a barrier layer supporting the adsorbing layer applied thereto; then
- (i) optionally, applying a covering material to the adsorbing layer.

40. (New) A process for producing an adsorbing material according to claim 38, said process comprising the following steps:

- (a) providing a carrier material in continuous sheet form; then
- (b) applying an aqueous dispersion comprising an isocyanate and an isocyanate-reactive crosslinker to the carrier material; then
- (c) predrying the dispersion applied in step (b) until the water is removed, wherein the predrying temperatures are below the crosslinking temperature of the dispersion and amount to about 80°C to 120°C, to form a continuous uninterrupted tacky layer or film which also serves as a bonding layer for the layer or membrane based on a cellulose-based polymer to be applied in subsequent step (d); then
- (d) applying a layer or membrane based on a cellulose-based polymer to the still tacky bonding layer generated in step (c); then
- (e) applying an aqueous dispersion comprising an isocyanate and an isocyanate-reactive crosslinker to the step (d) applied layer or membrane based on a cellulose-based polymer; then
- (f) optionally, predrying the dispersions applied in step (b) until the water is removed, wherein the predrying temperatures are below the crosslinking temperature of the dispersion and amount to about 80°C to 120°C, to form a continuous uninterrupted tacky layer or film which also serves as a bonding layer for the adsorbing layer to be applied in subsequent step (g); then
- (g) applying the adsorbing layer to the step (e) applied layer, consisting of the dispersion, or else to the step (f) generated, still tacky bonding layer; then
- (h) drying and crosslinking the dispersion or the still tacky bonding layer by heating to above the crosslinking temperature at temperatures of 140 to 180°C or more, to form a barrier layer supporting the adsorbing layer applied thereto; then
- (i) optionally, applying a covering material to the adsorbing layer.

41. (New) A process for producing an adsorbing material according to claim 1, said process comprising the following steps:
- (a) providing a release layer in the form of a siliconized or waxed release paper; then
 - (b) applying an aqueous dispersion comprising isocyanate and an isocyanate-reactive crosslinker to the release layer; then
 - (c) predrying the step (b) applied layer, consisting of the dispersion, until the water is removed, with or without crosslinking; then
 - (d) renewably applying an aqueous dispersion comprising an isocyanate and an isocyanate-reactive crosslinker to the step (c) produced, dried and optionally crosslinked layer; then
 - (e) optionally predrying the step (d) produced second layer until the water is removed, and applying a carrier material in continuous sheet form to the second layer obtained in step (d); then
 - (f) optionally predrying the step (d) applied second layer until the water is removed, with or without crosslinking; then
 - (g) removing the release layer; then
 - (h) renewably applying an aqueous dispersion comprising isocyanate and an isocyanate-reactive crosslinker to that side of the dried and optionally crosslinked layer obtained in step (c) that was previously covered with the release layer; then
 - (i) optionally predrying the dispersions applied in step (h) until the water is removed, the predrying temperatures being below the crosslinking temperature of the dispersion and amounting to about 80°C to 120°C, to form a continuous uninterrupted tacky layer or film which also serves as bonding layer for the adsorbing layer to be applied in subsequent step (j); then
 - (j) applying the adsorbing layer to the step (h) applied layer, consisting of the dispersion, or else to the step (i) generated, still tacky bonding layer; then
 - (k) drying and crosslinking the dispersion or the still tacky bonding layer by heating to above the crosslinking temperature at temperatures of 140 to 180°C or more, to form a barrier layer based on a laminate or composite of three interconnected polyurethane layers supporting the adsorbing layer applied thereto; then
 - (l) optionally, applying a covering material to the adsorbing layer.

42. (New) Protective material, said protective material comprising an adsorbing material according to claim 23.

43. (New) The protective material according to claim 23, wherein the protective material is selected from the group consisting of protective suits, protective gloves and protective covers.